

OCCLUSION

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CENTRIC RELATION

- ⦿ it is the relationship of the mandible to the maxilla when the properly aligned condyle-disk assembly is in the most superior position against the eminence irrespective of vertical dimension or tooth position.
- ⦿ Centric relation is about the condyles not the teeth.

CENTRIC OCCLUSION

- ⦿ it is the occlusion of opposing teeth when mandible is in centric relation. This may or may not coincide with the maximal intercuspal position.

VERTICAL DIMENSION OF OCCLUSION

- ⦿ It is the vertical position of the mandible in relation to the maxilla when the upper and lower teeth are intercusped at the most closed position.
- ⦿ Loss of vertical dimension is not a cause of tempo-mandibular disorders (TMD).

CORRECTION OF VERTICAL DIMENSION

(70 YEAR OLD MAN THAT WANTED A YOUNGER SMILE)



OCCLUSAL SCHEMES

1. **Bilateral Balanced Occlusion:** It is having the maximum number of teeth in contact in maximum intercuspation in all excursive movements. This is more applicable in complete denture fabrication, than in fixed restorations.

OCCLUSAL SCHEMES

Unilateral Balanced Occlusion (Group function):
It is when excursive contacts occur between all opposing posterior teeth on the working side. The non-working side is free of contacts until the mandible reaches centric relation. This is advantageous as the occlusal load is distributed along all the posterior teeth. This type of occlusion is used with long span FPD and when the canine is periodontally weak.

OCCLUSAL SCHEMES

Mutually Protected Occlusion: It is when the six anterior maxillary and mandibular teeth guide excursive movements of the mandible, with no posterior occlusal contacts during lateral and protrusive movements. Also called Anterior Protected Articulation. Posterior teeth come only in contact at the end of the chewing stroke thus minimizing horizontal loading of the teeth.

OCCLUSAL SCHEMES

Canine Protected Occlusion: it is a type of mutually protected occlusion in which the vertical and horizontal overlap of the canine teeth disengage the posterior teeth in the excursive movements of the mandible.

- ◉ Fuctional cusps
- ◉ Non-fuctional cusps
- ◉ Cusp to marginal ridge relationship
- ◉ Cusp to fossae relationship

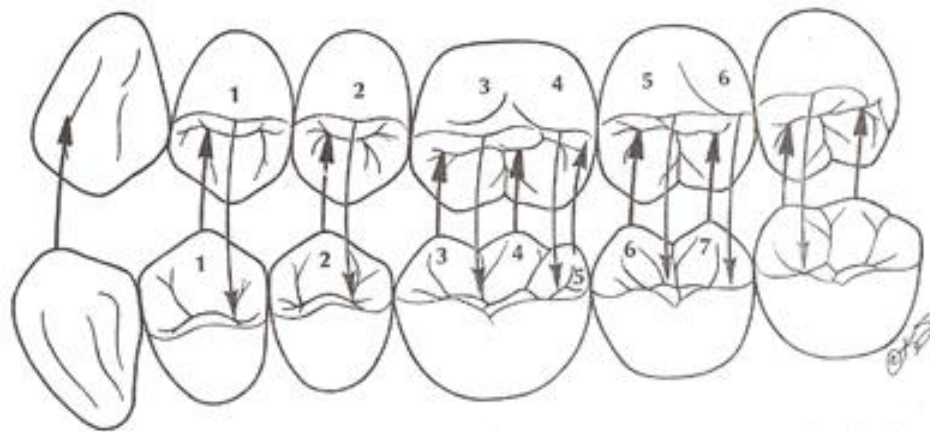


Figure 1: Diagram illustrating the occlusal contact points for a dental arch.

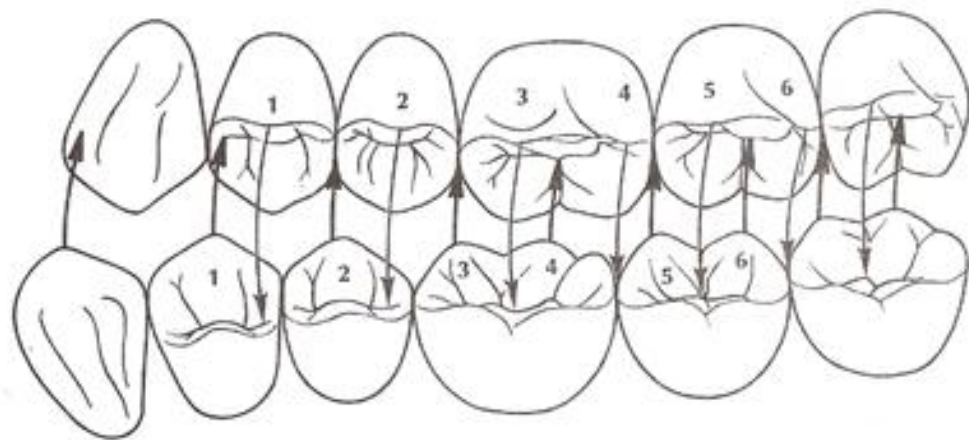
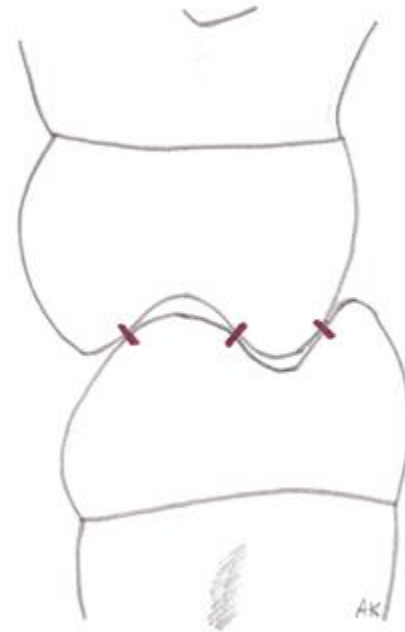


Figure 2: Diagram illustrating the occlusal contact points for a dental arch.

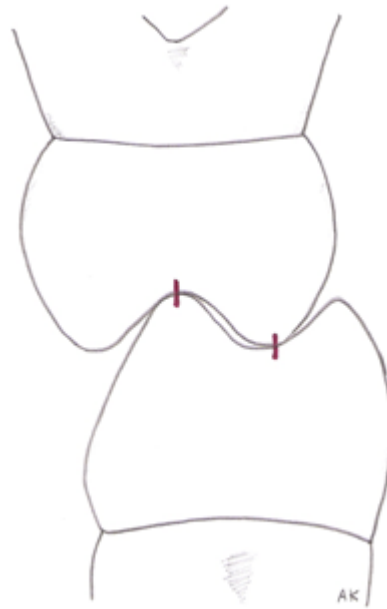
⊙ It is recommended to reproduce the cusp to fossa occlusion in fixed prosthodontics because:

- food impaction is prevented
- centric relation closure forces are nearer the long axis of the teeth
- Improved stability from each centric cusp contacts

CUSP CONTACTS



CUSP CONTACTS



PARAFUNCTIONAL HABITS

- ⊙ *Bruxism*: it is the involuntary rhythmic or spasmodic grinding of teeth with greater than normal chewing force.
- ⊙ This abnormal condition can occur during the day or at night. The prevalence of bruxism is about 10% and becomes less common with age.
- ⊙ Patients who brux exert considerable forces on their teeth, especially lateral forces which are destructive.

BRUXISM

- ⦿ Posterior wear facets are seen, with rapid widening of the periodontal ligaments space and increased mobility.
- ⦿ Cause is still unknown but may be due to malocclusion, emotional stress, neuromuscular disturbance, or a combination.
- ⦿ All ceramic restorations are contraindicated with this condition, with the best option being, full metal or veneered restorations.

CLENCHING

- ◉ *Clenching*: it is the forceful clamping of the jaws and teeth together. The pressure is maintained for some time with short periods of rest.
- ◉ It can be associated with anger, stress, physical exertion and intense concentration, rather than an occlusal disorder.
- ◉ Unlike bruxism, clenching may not damage the teeth, as the forces are directed along the long axis of the teeth.

CLENCHING

- ⦿ Possible problems that can occur from clenching are:
- ⦿ Abfractions
- ⦿ damage to the peridontium and TMJ
- ⦿ muscle overdevelopment

DETECTION OF PATHOLOGICAL OCCLUSION

related to teeth:

- - hypermobility.
- - open contact as a result of tooth migration
- - supereruption
- - abnormal teeth wear
- - cusp fracture
- - chipping

DETECTION OF PATHOLOGICAL OCCLUSION

related to peridontium:

- radiographic widening of the periodontal ligament space
- excessive bone loss

related to the musculature:

- acute or chronic muscle pain
- muscle fatigue
- in severe cases trismus

DETECTION OF PATHOLOGICAL OCCLUSION

related to the TMJ:

- pain, clicking and popping are common
- midline deviation on opening (deviation towards the affected side)
- must differentiate between TMJ pain and muscular pain as the later can be referred

MYOFACIAL PAIN DYSFUNCTION (MPD) SYNDROME

- ◉ diffuse unilateral pain in the preauricular area; muscle tenderness; clicking in the contra-lateral TMJ; and limited mouth opening.
- ◉ 3 possible theories for MPD syndrome:
 - a) Psychophysiological theory as a result of clenching or bruxism, with chronic muscle fatigue. Treatment should be emotional rather than dental.
 - b) Muscle theory due to continuous muscle hyperactivity causing referred pain to the TMJ and neck.
- ◉ Mechanical displacement theory due to malocclusion of teeth that displaces the condyle

OCCLUSAL TREATMENTS

- orthodontic realignment
- elimination of incorrect occlusal contact by selective reshaping of the teeth's occlusal surface (coronoplasty)
- restorations and replacement of missing teeth to reach a favorable occlusion
- occlusal splints

OCCLUSAL SPLINT



RULES OF CORONOPLASTY

- Determine the functioning and balancing cusps.
- Manipulate the mandible by both hands
- If there is interference in closing to centric relation (line of closure) use the MUDL rule....grind from the Mesial of the Upper and Distal of the Lower.
- Narrow the functional cusps before reshaping the fossae.
- Never shorten cusp heights, remove only from the inclines.
- Adjust centric interferences first followed by excentric.
- Adjust posterior teeth followed by the anterior.
- Use small round and football (flame) shaped finishing stones for reshaping.

DETECTION OF OCCLUSAL INTERFERENCES

- ◉ Traditionally marking paper
- ◉ Dark coloured waxes
- ◉ Sprays and paint-on materials
- ◉ Computer assisted dynamic occlusal analysis devices